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by chance it moved about in a limited space as in some nook in which it had taken up its abode. In such a web insects would be trapped, and thus might arise the habit of building webs for the purpose of trapping insects. Many spiders spin simple irregular webs composed entirely of the drag-line silk. From this simple type was traced series of specializations leading to the different types of complicated webs. In the making of some of these several different kinds of silk are used.

The following officers were elected for the year 1912:

President—Stephen A. Forbes.

First Vice-president—A. D. Hopkins.

Second Vice-president—C. P. Gillette.

Secretary-Treasurer—Alex. D. MacGillivray.

Additional Members of Executive Committee: J. H. Comstock, J. B. Smith, Henry Skinner, Herbert Osborn, E. D. Ball, P. P. Calvert.

Member of Committee on Nomenclature—H. T. Fernald.

The society adjourned to meet with the American Association for the Advancement of Science at Cleveland, Ohio.

ALEX. D. MACGILLIVRAY,
Secretary-Treasurer

SOCIETIES AND ACADEMIES

THE ACADEMY OF SCIENCE OF ST. LOUIS

THE meeting of the Academy of Science of St. Louis was held at the Academy Building, Monday evening, January 15, 1912, President Engler in the chair. Dr. Arthur E. Ewing presented an illustrated account of *Sanninoidea exitiosa* (Say) and *Sanninoidea opalescens* (Hy. Edwards).

After describing the varieties of the *S. exitiosa* and the difference between them and the *S. opalescens*, giving the history of the insects and Beutenmüller's classification, examples were exhibited of the eggs on the bark of the tree, on the gum from the base of the tree, on leaves from the lower limbs of trees, and one on a trumpet vine leaf that grew a foot from the base of a tree, all of which were observed as they were laid and immediately collected, the collection having been made at the Mountainboro orchard, Mountainboro, Alabama, and at Gadsden, Alabama, between the first and the fifth of September, 1911. The exit of the larvæ from these eggs was observed to be from seven to nine days, the time of the one laid on the trumpet vine was eight days.

For four successive seasons the life period of

the insect had been carefully noted at Mountainboro, and it was found to confirm for northern Alabama the observations of Porter, Starnes and Sherman for Georgia and North Carolina, and shows that in the Southern Allegheny peach belt pupation begins about the first of August and the moth appears the last week in the same month. In 1908, August 4, as many full-grown borers were captured in this orchard of 15,000 trees as there were cocoons, the total number being 1,100; August 7, 300 cocoons were captured and as many borers destroyed. The same conditions obtained during the first week of August, 1909. In 1910 the investigation was made later and resulted in the finding of 8,500 cocoons between the 20th and the 24th of August and very few borers. Two hundred of the cocoons were placed in a wire cage on a southern covered porch. From these 25 moths emerged previous to September 5, 46 between the 5th and the 8th inclusive, 29 between the 9th and the 13th, and after this only two, one male the 16th and another the 21st. The remainder failed to develop.

Observations on the moths in the cage were that their activity depends greatly upon the temperature; with it below 70° F. they are very quiet, and very active when it is above 80° F. At night they sleep with their antennæ spread rather wide, some with the wings moderately spread, usually, however, with the wings near the body as when at rest, and the male with the tip of the abdomen strongly turned upward. When awake and alert the antennæ were erect and near together as if indicating the facial expression of the insect. At night they took no notice of an electric light right above them when it was turned on and off. Thus caged they lived only three or four days.

The 28th of August, 1911, fifty infested trees were examined. From the half of the cocoons the moths had escaped. During the examination only one borer was found which had not yet begun its cocoon. Throughout the orchard the moths were numerous, and in greater numbers from the 1st to the 5th of September. On September 13 only one moth was found, although a careful outlook was kept during the middle of the day, the time when the imago is most active.

An exhibition was made of the larvæ at numerous ages, from the emergence from the egg to the time of spinning the cocoon, together with an example of their destructive work on the tree, and numerous mounted examples of the male and female moth of the *S. exitiosa* type.

Also a cocoon was shown filled with the larvæ

of *Bracon mellitor* (Say), and others filled with the cocoons of this ichneumon, the parasite having been found in from one to two per cent. of the *S. exitiosa* cocoons examined.

Particular stress was laid upon the fact that only black and white drawings of the insects were given in the various state and national bulletins which were distributed throughout the country for the instruction of the orchardist, and lantern slides were shown from the plates of Beutenmüller in which there were at least 75 other examples of *Sesia*, which in black and white would readily be confused with this one by the laity. To be of any real value to the people all government bulletins dealing with insects should contain exact colored plates of the insect described in order to be intelligible to those not familiar with entomology. As an example, the owners and the foreman of the Mountainboro orchard did not know the *S. exitiosa* until they saw it emerge from the cocoon, although all of them had carefully read all the important government bulletins on the subject, particularly those of Slingerland, Marlatt and Starnes, and they had owned and cared for the orchard for more than ten years. As the moth flies only in mid-day, it was unquestionably often seen by them without being recognized.

GEORGE T. MOORE,
Corresponding Secretary

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 455th regular meeting of the society was held October 24, in the new National Museum. The first paper read was by Mr. J. Mooney, on "Indian Survivals in the Carolinas."

He gave a brief account of his summer's work with the eastern Cherokee on their reservation in the mountains of western North Carolina, and with some mixed-blood survivors, locally known as Croatan Indians, in the eastern part of the state. The Eastern Cherokee, numbering about 2,000, are descendants of those who fled to the mountains when the body of the tribe was removed to the Indian Territory in 1838. They still retain most of their aboriginal customs and beliefs, together with their language, although the larger tribal ceremonies are nearly obsolete.

The Croatans, so-called from an attempt to identify them with Raleigh's lost colony of 1585, are centered chiefly in Robeson County, to the number of about 8,000 according to the last census, with bands in adjoining counties and in South Carolina. They appear to be descendants of the original native tribes of the same region, largely mixed

with alien blood, the Indian blood still predominative, although they have completely lost all knowledge of Indian customs, language or tribal names. They are intelligent and prosperous people, farmers and small tradesmen, fully up to the level of their white neighbors. They have official recognition from the state as Indians, with a separate school appropriation and support of a small paper called the *Indian Observer* devoted to their interests.

Mr. Hodge gave an exhibition and talk on the speech and civilization of the seventeenth and eighteenth centuries in New Mexico. Dr. P. Radin spoke on "Some Archeological Problems of the Winnebagoes." Dr. Hrdlička suggested that the physical anthropology of the skulls found in the Wisconsin mounds should be taken into consideration by the speaker.

THE 456th regular meeting of the society was held in the new National Museum, November 14. The speaker of the evening was Mr. W J McGee, on "Conditions Limiting the Growth of Population in United States." His talk was an elaboration of his paper in *SCIENCE* (October 6, 1911, pp. 428-435).

THE 457th regular meeting of the society was held in the new National Museum, January 16. The speaker was Dr. J. W. Fewkes, who lectured on the "Western Neighbors of the Prehistoric Pueblos," illustrating his remarks with lantern slides. The early Spanish discoverers, he said, designated the habitations of the sedentary Indians of the southwest by several names, as pueblos, casas grandes, rancherías and trincheras, the word pueblo being especially assigned to a compact several-storied community house of terraced form represented most abundantly along the Rio Grande River. The large houses on the Gila they called casas grandes, and they gave the name rancherías to fragile-walled dwellings made of brush and clay supported by logs. Defensive walls were sometimes called trincheras. Each of these names indicates distinct architectural types, although they were not used with accuracy. In late years it happens that all ruined buildings of the southwest, especially those independent of cliffs, are called pueblo ruins, the culture of the people that once inhabited them being designated the pueblo culture. It is well to preserve the term pueblo for the crowded-terraced many-storied buildings to which it was originally applied, and when this is done the distribution of the pueblo

type in our southwest is considerably restricted. The stone ruins ascribed to the ancient sedentary inhabitants of Arizona from the Upper Verde River west to the Colorado are not true pueblos. In this region there predominated massive stone forts of magnitude and fragile-walled houses with stone foundations, a duality everywhere evident. The indications are that both kinds of buildings were constructed and used simultaneously by the same people. The forts, situated on almost inaccessible hill tops, were asylums for safety, and more perishable buildings on the river terraces were habitations near aboriginal farms. The great number of these forts on the western border of the pueblo region implies a great necessity for defense along the whole western border of Arizona and Sonora in Mexico.

Dr. Fewkes gave a brief account of the different forts and terrace dwellings on the Upper Gila and its tributaries, Sycamore and Granite creeks, the Chino and Williamson valleys and Walnut Creek to the mouth of the Santa Maria and other tributaries of the Colorado, all examples cited substantially agreeing in the duality of architectural type and the absence of true pueblo structure.

The simple construction of the forts and the rude character of the masonry made of undressed stone, without mortar, was referred to. Views of the remains of dwellings or rancherias on the river terraces were shown and commented upon. Terrace sites indicated by rectangular and circular rows of stones and low mounds occur all along the Chino and Walnut valleys to Aztec Pass. These show no evidences of kivas or sacred rooms, or many-storied dwellings. The pottery found near them is rude, sometimes decorated; the pictography is characteristic; the people made extensive irrigation ditches.

The most important forts mentioned were those on the Upper Verde, near del Chino, and on the limestone ridge west of Jerome Junction. Two important forts (one situated near the mouth of Walnut Creek and the other at Aztec Pass, the latter being the "pueblo" first described by Wheeler) were referred to by the speaker. Maps of the Walnut Creek region are defective, the most prominent elevation, Mount Hope, being wrongly located on some of the latest issued by the land office. Big Burro and other streams west of Aztec Pass have forts overlooking enormous canyons of great scenic interest.

The geographical distribution of the forts and trincheras in western Arizona corresponds in a general way with the northern extension of the

Yuma stock, according to Major Powell's linguistic map. The country west of the Verde Valley in which the ruins occur was peopled by Yavapai, Hualapai, Havasupai, and other Indians called by Cortez, Apaches. The Havasupai, who now live in the depths of the Cataract Canyon, and the Hualapai are said to have legends that their ancestors constructed some of the buildings considered. The Hopi Indians dwelling in the pueblo Oraibi claim that certain of their clans came from the west and that they are of Yuma stock. The question of the kinship of the ancient builders is of interest to the physical anthropologist as well as to the linguist and student of culture history. As the Indians of the Yuman stock formerly extended to the Pacific, the possible kinship of the western neighbors of the pueblos to tribes of Southern California is significant.

Dr. Aleš Hrdlička in discussion said that the results of the direct study of man himself in the region west of the pueblos agree in a large part with the conclusions arrived at by Dr. Fewkes, but in part they also differ. It is quite possible that the region about and west to southwest of the Aztec Pass was once occupied by either the Mohave or Yuma. The people against whom they had to defend themselves, however, were more probably the Apaches. The Walapai and Suppai, who to-day speak the Mohave language, are physically Apache, and the same is true of the Yavapai. As the Apache type is a very distinct one, this conclusion is quite definite. Both tribes contain, of course, some Mohave and probably also Pueblo admixture.

Dr. Hrdlička showed a series of views of special Suppai and Walapai huts which are related to those of the Apache but which are totally distinct from those of the Mohave and Yuma, and numerous types of men and women from the several tribes, showing great resemblance between the Walapai and Suppai and the Apache, while the Mohave resemble much more closely the pueblos.

Mr. George Stetson then spoke on the Code of Hammurabi. His remarks showed how humanitarian the code was, and what an advance it was on Roman law in several respects, though antedating the latter by centuries. The speaker also demonstrated how the laws of various states of the union and certain foreign nations might well be advantageously amended on the lines of the code under discussion.

TRUMAN MICHELSON,
Secretary